



PRODUCT SPECIFICATION SHEET

CUSTOMER : 深圳办
PRODUCT TYPE : SMD TUNING FORK 3.2X1.5
NOMINAL FREQ. : 32.768 KHz
FL P/N : 3SQ3270012
REVISION : S1
CUSTOMER P/N :

CUSTOMER'S APPROVAL&DATE

| |
|--|
| |
|--|

FL CORPORATION

| APPROVED | CHECKED | DESIGNED |
|----------|---------|------------|
| Jay Lee | Jin Qi | Han Shuang |

MSL 1
RoHS Compliant



CONTENTS

PAGE

- SPECIFICATION REVISION RECORD SHEET 2
- ELECTRICAL SPECIFICATIONS 3
- DIMENSIONS & MARKING 4
- RELIABILITY TEST SPECIFICATIONS 5
- PACKAGING REQUIREMENT 6
- SPECIFICATION OF THE ENVIRONMENT-RELATED SUBSTANCES 7

ATTACHMENT (optional)

- ELECTRICAL CHARACTERISTICS TEST A YES NO
- TEMPERATURE CHARACTERISTICS TEST B YES NO



PRODUCT DESCRIPTION

Standard atmospheric conditions

Unless otherwise specified. The standard range of atmospheric conditions for making measurement and tests are as follow:

Ambient temperature $25\pm 2^{\circ}\text{C}$
Relative humidity 40%~70%

If there is no doubt the results, measurement shall be made within the following limits:

Ambient temperature $25\pm 2^{\circ}\text{C}$
Relative humidity : 40%~70%

Measure equipment

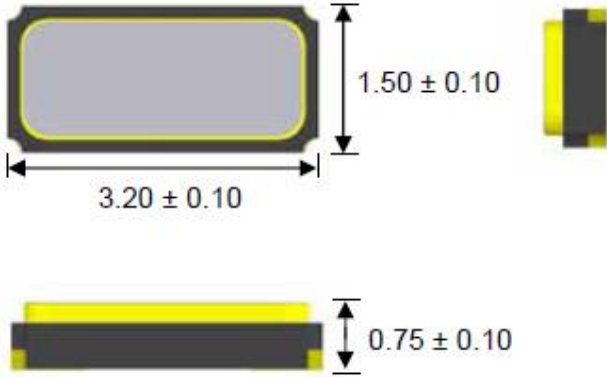
Electrical characteristics measured by S&A250B or equivalent.

ELECTRICAL SPECIFICATIONS

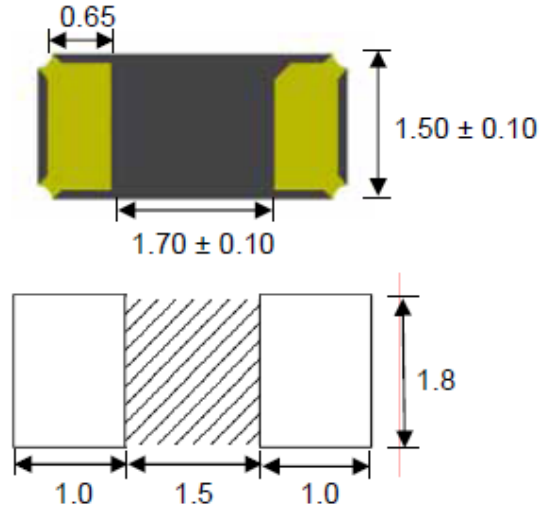
| | Parameters | SYM. | Electrical Spec. | | | | Notes |
|----|----------------------------|------|---------------------------------|------|-----|--------------------|----------------------------------|
| | | | MIN | TYPE | MAX | UNITS | |
| 1 | Nominal Frequency | F0 | 32.768 | | | KHz | - |
| 2 | Frequency Tolerance | - | ± 20 | | | ppm | at 25 °C |
| 3 | Driver Level | DL | - | 0.1 | 1 | uW | - |
| 4 | Load Capacitance | CL | 12.5 | | | pF | - |
| 5 | Series Resistance | - | - | - | 70 | K Ω | - |
| 6 | Temperature characteristic | - | $(-0.03\pm 0.01)\times 10^{-6}$ | | | $^{\circ}\text{C}$ | at 25 °C $\pm 5^{\circ}\text{C}$ |
| 7 | Storage Temperature | - | -40 | ~ | 125 | $^{\circ}\text{C}$ | - |
| 8 | Operating Temperature | - | -40 | ~ | 125 | $^{\circ}\text{C}$ | - |
| 9 | Shunt Capacitance | C0 | - | - | 7 | pF | |
| 10 | Motional Capacitance | C1 | - | - | - | fF | |
| 11 | Insulation Resistance | - | 500 | - | - | M Ω | at DC 100V $\pm 15\text{V}$ |
| 12 | Aging | - | ± 3 | | | ppm | 1st Year |



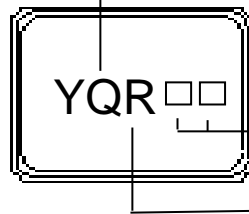
DIMENSIONS
(UNIT:mm)



RECOMMENDED SOLDER PAD
(UNIT:mm)



MARKING



Frequency
EX: 32.768KHz = Q

Year Month Code

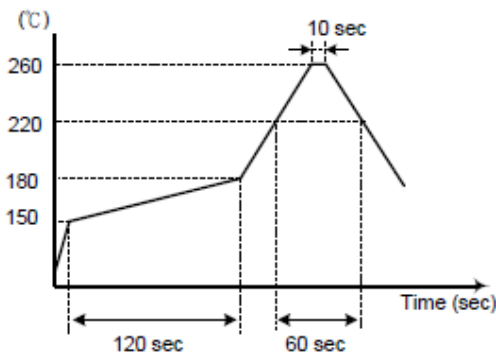
Administrative Symbo

| | | | Month | | | | | | | | | | | |
|------|------|------|-------|------|------|------|------|------|------|------|------|------|------|------|
| | | | Jan. | Feb. | Mar. | Apr. | May. | Jun. | Jul. | Aug. | Sep. | Oct. | Nov. | Dec. |
| Year | 2017 | 2021 | A | B | C | D | E | F | G | H | J | K | L | M |
| | 2018 | 2022 | N | P | Q | R | S | T | U | V | W | X | Y | Z |
| | 2019 | 2023 | a | b | c | d | e | f | g | h | j | k | l | m |
| | 2020 | 2024 | n | p | q | r | s | t | u | v | w | x | y | z |

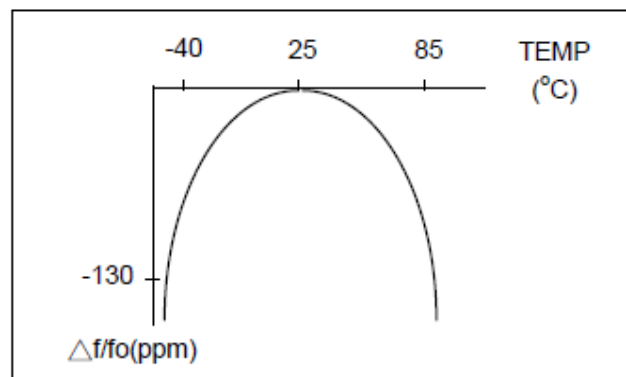
SUGGESTED REFLOW PROFILE

Total time : 200 sec. Max.

Solder melting point :220°C



TEMPERATURE V.S FREQUENCY CURVE



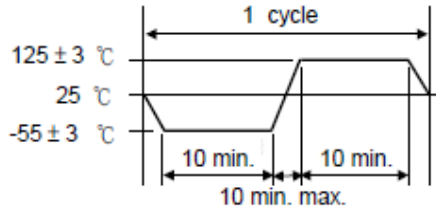


RELIABILITY SPECIFICATIONS

1.MECHANICAL ENDURANCE

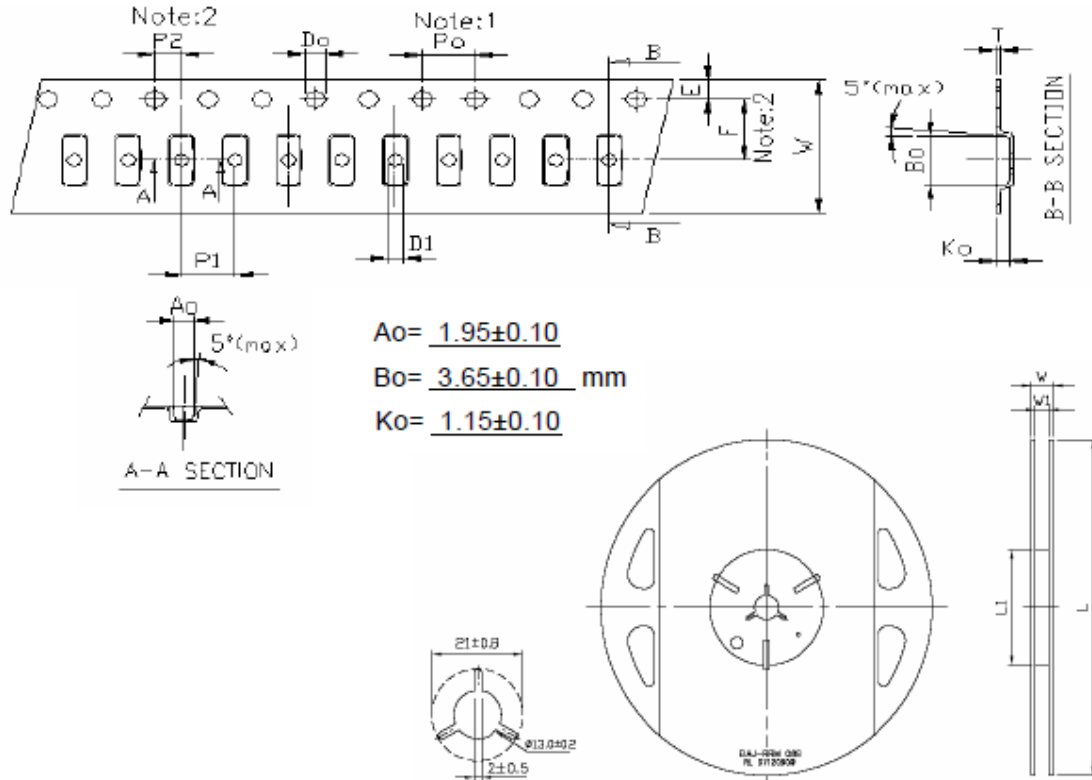
| No. | Test Item | Test Methods | REF. DOC |
|-----|------------------|--|-------------|
| 1 | Drop Test | 150 cm height, fall freely onto concrete floor 3 times. | MIL-STD-202 |
| 2 | Mechanical Shock | Device are shocked to half sine wave (1000 G) three mutually perpendicular axes each 3 times. 0.5m sec. duration time | MIL-STD-202 |
| 3 | Vibration | Frequency range 10 ~ 2000 Hz Amplitude 1.52 mm,20G Sweep time 20 minute Perpendicular axes each test time 4 hours (Total test time 12 hours) | MIL-STD-883 |
| 4 | Solderability | Temperature 245 °C ± 5°C Immersing depth 0.5 mm minimum Immersion time 5 ± 1 seconds Flux Rosin resin methyl alcohol solvent (1 : 4) | MIL-STD-883 |

2.ENVIRONMENTAL ENDURANCE

| No. | Test Item | Test Methods | REF. DOC |
|-----|------------------------------|---|-------------|
| 2 | Resistance To Soldering Heat | Pre-heat temperature 125 °C Pre-heat time 60 ~ 120 sec. Test temperature 260 ± 5 °C Test time 10 ± 1 sec. | MIL-STD-202 |
| 2 | High Temp. Storage | + 125 °C ± 3 °C for 1000 ± 12 hours | MIL-STD-883 |
| 2 | Low Temp. Storage | - 40 °C ± 3 °C for 1000 ± 12 hours | MIL-STD-883 |
| 2 | Thermal Shock | Total 100 cycles of the following temperature cycle  | MIL-STD-883 |
| 3 | Pressure Cooker Storage | 121 ± 3°C, RH100%, 2 bar, for 240 hours | JIS C6701 |
| 3 | High Temp&Humidity | 85°C ± 3°C, RH 85% , 1000Hrs | JIS C5023 |



PACKING :



Ao= 1.95±0.10
Bo= 3.65±0.10 mm
Ko= 1.15±0.10

| DIMENSIONS | K1 | P0 | P1 | P2 | D0 | D1 | E | F | 10P0 | W | T | pcs / Reel |
|------------|----|----|----|----|------|-----|------|-----|------|---|-----|------------|
| | - | 4 | 4 | 2 | 1.55 | 1.1 | 1.75 | 3.5 | 40 | 8 | 0.2 | 3K |

| REEL DIMENSIONS | W | W1 | L | L1 |
|-----------------|--------|---------|----------|---------|
| | 11.4±1 | 9.0±0.3 | 180+0/-3 | 60+1/-0 |

REMARK : 1. 230 mm (9.05) minimum leader which consist of carrier and/or tape followed by a minimum of 160 mm (6.3) of empty carrier tape sealed with cover tape.
2. 160 mm (6.3) minimum trailer of empty carrier tape sealed with cover tape.



| Range | Products | Packing Material |
|---|----------------------------------|---|
| Banned Substances | Maximum concentration ppm(mg/kg) | Maximum concentration ppm(mg/kg) |
| 1.镉及镉化合物 Cadmium and cadmium compounds | 100 | 100 |
| 2.铅及铅化合物 Lead and lead compounds | 1000 | 100 |
| 3.汞及汞化合物 Mercury and mercury compounds | 1000 | 100 |
| 4.六价铬化合物 Hexavalent-Chromium VI (Cr+6) | 1000 | 100 |
| 5.聚溴联苯 PBB Polybrominated biphenyls | 1000 | N/A |
| 6.聚溴二苯醚 PBDE Polybrominated diphenyl ethers | 1000 | N/A |
| 7.邻苯二甲酸二(2-乙基己基)酯 DEHP Di (2-ethylhexyl) phthalate | 1000 | N/A |
| 8.邻苯二甲酸丁苄酯 BBP Butyl Benzyl Phthalate | 1000 | N/A |
| 9.邻苯二甲酸二丁酯 DBP Dibutyl Phthalate | 1000 | N/A |
| 10 邻苯二甲酸二异丁酯 DIBP Diisobutyl Phthalate | 1000 | N/A |
| 11. 氟 (F)、氯 (Cl)、溴 (Br)、碘 (I) Fluorine、Chlorine、Bromine、Iodine | 900、900、900、900 注: Br+Cl<1000 | N/A |
| 12.包装材料中重金属(汞、镉、六价铬、铅、PBB、PBDE)之总量 Heavy metals (mercury, cadmium, lead, Cr+6,PBB and PBDE) in packing materials | N/A | 100 铅(Pb) + 镉(Cd) + 汞(Hg) + 六价铬 (Cr+6) <100ppm |
| 13.高度关注物质 SVHC-Substances of Very High Concern | 1000 | N/A |

